

# **Domain Specificity of Disgust on Political Ideology in Australia**

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## **Statement of Sources**

I declare that this report is my own original work and that contributions of others have been duly acknowledged.

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Anna-Kate Fitzgerald

Date: 13/10/2016

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**Domain Specificity of Disgust on Political Ideology in Australia**

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### **Abstract**

Disgust can influence the way we make judgments about political issues. Most research has measured a general perspective of disgust, rather than examining its domain specificity. The aim of this study was to undertake a domain specific investigation of this relationship. This was done by analysing changes to specific socio-political views that occurred as a result of experimental manipulation of the three disgust factors; core, contamination and animal-reminder. Participants were 136 male ( $n = 26$ ) and female ( $n = 109$ ) University of Tasmania undergraduate students aged between 17 and 61 years. Participants first completed the Australian Political Ideology Scale (APIS) online. A week later, the same participants were shown 10 pictures depicting either core disgust, contamination disgust, animal-reminder disgust or a neutral mood, then completed the APIS again. The elicitation of contamination disgust caused a significant increase in conservative views across APIS scores ( $p = .018$ ) while core and animal-reminder disgusts did not show effects. These findings suggest the effect of disgust on political ideology may be domain specific. This research is the first of its kind in an Australian population and contributes meaningful results to a growing field. Substantiation of these results in larger and international samples is justified.

We spit out off-tasting milk, we hold our breath around garbage bins and we don't pick up dog faeces with our bare hands. In Darwin's *The expression of emotions in man and animals* (1872/1965), disgust is described as a reaction to anything repulsive, be it actual or imagined, as experienced through the senses. Disgust is universally recognised in Ekman's seven basic emotions (Ekman, 1994). Disgust occurs by automatic appraisal of threatening stimuli (Rozin, Haidt, & McCauley, 2008). It is accompanied by distinctive physiological symptoms such as decreased heart rate, nausea, and selective activation of the levator labii; a small muscle next to the nose that raises the lip, and is characteristic of the disgust facial expression (Stark, Walter, Schienle, & Vaitl, 2005). Disgust acts as an adaptive tool by integrating psychological mechanisms of threat detection, appraisal of severity and one's own susceptibility and regulation of behavioural, cognitive and emotional responses (Tooby & Cosmides, 1992). Disgust is experienced by all humans, but varies in its salience (Haidt, McCauley, & Rozin, 1994). Tybur, Lieberman, Kurzban and DeScioli (2013) suggest that the more threatening a stimulus is to our physical, mental or social health, the more likely it is that we will perceive it as disgusting. For example, exaggerated media coverage of an influenza outbreak has the potential to increase perceived risk of the infection and thus heighten the disgust response to it (Schaller and Park, 2011).

### **The Evolutionary Perspective**

An evolutionary perspective of disgust is essential in understanding both the development and underlying mechanisms of the emotion (Rozin, Haidt, & McCauley, 2008). The concept often referred to as pathogen disgust encompasses the most primal features of disgust; those that function to survive (Tybur, Lieberman,

Kurzban, & DeScioli, 2013). Psychoanalyst, Andras Angyal (1941) suggests disgust was initially a response to oral ingestion of offensive material. Body waste products and toxins are particularly salient, especially when one's body comes in contact with the stimulus (Angyal, 1941). Likewise, Rozin, Haidt and McCauley (2008) suggest that disgust began as a mechanism of food-rejection, triggered by ingesting distasteful, predominantly bitter, foods. This response is frequently demonstrated by infants, just hours old, who display characteristic facial expressions of disgust to bitter tastes, suggesting the emotion has strong innate qualities (Steiner, 1973). The disgust reaction is therefore an adaptive function that serves to avoid and reject harmful substances from the body, thus evading contamination and disease (Tybur, Lieberman, Kurzban, & DeScioli, 2013).

A somewhat more detailed model of pathogen disgust is the Behavioural Immune System (BIS), also referred to as the Psychological Immune System (Lieberman & Patrick, 2014; Schaller & Duncan, 2007). This system actively seeks out known threats to health in both objects and other humans and engages in behaviour to prevent contact with those stimuli (Schaller & Park, 2011). Essentially, pathogen disgust and the BIS are both information processing models whereby perceptual systems, including olfactory and visual, are used to detect threat, which activates evaluation threat severity and appropriate behavioural avoidance (Lieberman & Patrick, 2014). A distinct feature of the BIS is its theorised over-active signal detection system (Schaller & Park, 2011). In its attempt to avoid false-negative errors (missing the threat), the BIS may often detect threat in superficial stimuli that does not actually pose any real harm (Schaller & Park, 2011). For example, the sight of chocolate would not make most people feel disgusted, but chocolate in the shape of dog faeces might. Although there is benefit to this

mechanism, Schaller (2006) also suggests that individuals can become unsociable and even discriminatory in attempt to avoid harm. For example, avoidance responses to individuals who present characteristics similar to actual diseased individuals, such as physical anomalies, can lead to pernicious outcomes and can harm interpersonal relations (Schaller & Park, 2011).

### **Modern Disgust Theory**

It is theorised that over time, this primitive and basic oral rejection function of pathogen disgust was accreted to include a vast number of elicitors (Chapman & Anderson, 2013). These elicitors may include sexual acts, reminders of death, bodily violations (e.g., injuries) and impure or diseased individuals (Rozin, Haidt, & McCauley, 2000). The scope of disgust was therefore broadened to be one of protecting the physical, moral, spiritual and social self (Fessler & Haley, 2006). For example, Tybur, Lieberman, Kurzban and DeSciolo (2013) theorise that disgust evolved to regulate appraisals of contamination avoidance as well as mate choice and moral judgment. In addition to pathogen disgust, when a moral or social transgression is deemed disgusting, the response acts as persuasive message toward maintaining social norms and customs (Tybur, Lieberman, Kurzban, & DeScioli, 2013). Several other well-known models describe disgust as an encompassing response to a number of physical, social and moral elicitors.

**The Rozin-Haidt-McCauley Model.** Over the past two decades, the theory developed by Rozin, Haidt and McCauley (1993), referred to as the RHM model, has been widely cited in disgust research (Tybur, Lieberman, Kurzban, & DeScioli, 2013). The authors suggest that disgust evolved through a process known as pre-adaptation, whereby distaste had been re-defined over time to a more complex

function of disgust (Rozin & Haidt, 2013). The RHM model outlines four domains; core, animal-reminder, interpersonal and moral disgust (Rozin, Haidt, & McCauley, 2008). Rozin, Haidt and McCauley (1993) further suggest that purely social issues, such as racism, hypocrisy or injustice can elicit disgust as well. Likewise, Haidt (2012) suggests that the ideologies of social groups are upheld by the condemnation of differing group behaviours, evoked through the disgust response. Moreover, Simpson, Carter, Anthony and Overton (2006) discuss the existence of a socio-moral disgust, which is distinct from pathogen disgust but evokes the same physiological responses, such as lowered heart rate and levator labii activation. The RHM model's comprehensive account of disgust lead the way to a more parsimonious and reliable model, containing just three factors.

**The Three-Factor Model.** The three-factor model of disgust is considered the most widely accepted framework to date (van Overveld, de Jong, Peters & Schouten, 2011). The three factors include core, contamination and animal-reminder disgust.

Core disgust can be described with much the same foundation of pathogen disgust and is the most primitive of the domains (Rozin, Haidt, & McCauley, 1993). Core disgust is described as the oral-rejection or repulsion of a substance that is perceived as being infectious or harmful. Elicitors of core disgust may include seeing vomit, witnessing bad hygiene or accidentally eating rotten food.

Contamination disgust is described as any threat of disease or interpersonal harm from another person or object (Olatunji et al., 2007). Although similar to core disgust, contamination disgust differs in that it is elicited by stimuli that may represent disease or infection, but is not necessarily the source (Rozin, Haidt, &



McCauley, 2000). For example, touching a toilet seat or drinking from a friend's drink bottle.

Animal-reminder disgust essentially describes the need for humans to repress the notion that we are animals and that our death is imminent (Rozin & Haidt, 2013). Therefore, anything that may remind us of this fact, (e.g., urinating, unusual sexual behaviours, gore or deformity) is likely to make us uncomfortable, if not disgusted.

The three-factor model's complementary measurement tool, the Disgust Scale-Revised (DS-R; Haidt, McCauley & Rozin, 1994; revised by Olatunji et al., 2007) was developed in response to questionable psychometric properties of Haidt, McCauley and Rozin's Disgust Scale (Haidt, McCauley & Rozin, 1994). The DS-R refined eight domains to just three, confirming greater internal consistency with fewer domains (Olatunji, et al., 2007; Olatunji, Haidt, McKay, & David, 2008). It is the most widely used tool for the measurement of individual propensity to experience disgust, better known as disgust sensitivity (DS) (de Jong & Merckelbach, 1998). Disgust sensitivity is a stable human trait, but it can change for different stimuli or for individual circumstances (Brenner & Inbar, 2015). For example, sensitivity to disgust increases during pregnancy, and decreases when sexually aroused (Borg & de Jong, 2012; Fessler, Eng, & Navarrete, 2005). Furthermore, Berger and Anaki (2014) found that gender explained the most variance in DS when compared with religion, education and age, which produced only modest effects. This is in consensus with other research which has found that women are more sensitive to disgusting stimuli than men (Druschel & Sherman, 1999; Olatunji, Sawchuck, Arrindell & Lohr, 2005).

Empirical support for this model shows consistent findings of differential effects of the domains in a number of areas including personality and anxiety disorders. For example, Olatunji, Haidt, McKay and David (2008) examined the relationships between the three disgust domains and a range of clinical traits and symptoms (e.g., behavioural inhibition and core disgust,  $r = .46$ ). For example, higher levels of contamination DS are associated with fear of contamination in obsessive compulsive disorder while high core DS uniquely predict animal phobia (Olatunji, Haidt, McKay, & David, 2008). Similarly, individuals who have spider phobias have reliably reported higher levels of core and animal-reminder disgust compared to contamination disgust (Bianchi, 2012; de Jong & Merckelbach, 1998). In addition, the researchers found that the three domains likely represent distinct cognitive functions that manifest in distinct clinical conditions (e.g., OCD symptoms and contamination disgust,  $r = .59$ ), (Olatunji, Haidt, McKay, & David, 2008). Differential behavioural tendencies were also examined. Olatunji, Haidt, McKay and David (2008) asked participants to complete the DS-R and watch three clips pertaining to core, contamination and animal-reminder disgust, eat a grape, and rate how much they avoided watching each video and how much they avoided eating the grape. The results of this manipulation revealed only core disgust significantly predicted avoidance of the grape task, congruent with its theoretical characteristics of oral rejection of pathogen threat (Olatunji, Haidt, McKay, & David, 2008; Rozin, Haidt, & McCauley, 2008).

In summary, disgust began as a primal mechanism of pathogen avoidance, but has evolved to include elicitors of the interpersonal, spiritual and moral nature. The three-factor model is the most widely accepted framework and its domain specific effects on personality, anxiety and neurophysiological symptoms are well

documented. Recent research has also shown an association between feeling disgusted and adhering to certain political ideologies (e.g., Brenner & Inbar, 2015; Terrizzi, Schook, & Ventis, 2010). The majority of this research suggests an overarching increase in conservative views from the inducement of disgust, or for higher levels of disgust sensitivity (e.g., Inbar, Pizarro & Bloom, 2008). Others, however, suggest that disgust can cause the opposite effect, resulting in increased liberal views (Petrescu & Parkinson, 2014). It is this discrepancy in the literature that this thesis will focus on.

### **Political Ideology in Australia**

Erikson and Tedin (2003, p. 64) characterise ideologies as a “set of beliefs about the proper order of society and how it can be achieved”. Similarly, Denzau and North (2000) suggest ideologies describe shared views of a community that signify how that community and its environment should be governed. Political ideologies shape and are shaped by political events and the social environments in which they take place (Edwards, 2013). The most parsimonious model of political ideology is the liberal (left-wing) and conservative (right-wing) distinction (Benoit & Laver, 2006). Conservative views favour capitalism, individualism, stability and order. Liberal views favour change, equality, protest and socialism (Fuchs & Klingemann, 1990). Political ideology in Australia is similar, but not identical, to ideological systems in other western democracies such as the US, the UK or Canada (Sawer, 2001). For example, political ideologies are largely polarized in the US, expressed primarily through Democratic and Republican stances (Rogowski & Sutherland, 2016). Moreover, individuals who identify as socially conservative are likely to vote Republican (Fiorina & Abrams, 2008). Comparatively, despite having two major

parties (the Australian Labour Party and the Liberal National Party), Australian political society is much less polarized and individuals are more likely to vote based on specific party policies or party leader preference (Sawer, 2001). Another distinction between American and Australian political ideology is the influence of religion. American conservatism is often associated with religion and morality and conservative parties have been known to use religious positions as a means of gaining important votes (Rogowski & Sutherland, 2016). By contrast, religion in Australia has had little influence on political matters, largely due to religious factions denigrating convict Australians, who made up a large portion of the general public in early Australian times (Freedman, Sargent, & Stears, 2013; Sawer, 2001). Although the terms conservative and liberal and left-right are generally synonymous in Australian politics and even more so in American politics, other political cultures differ considerably. For example, Brenner and Inbar (2015) conducted a study linking disgust and political ideology in a large Dutch sample. They suggest that because the Netherlands governs under a much more complex axis of ideology, where parties can be both left-leaning and conservative in their stance, they were unable to predict voting as other American samples could previously (Brenner & Inbar, 2015).

### **Disgust and Political Ideology**

Much of the research into the association of disgust and political ideology has suggested that elicited disgust, or higher disgust sensitivity, results in an increased conservative political ideology (Brenner & Inbar, 2015; Inbar, Pizarro, Iyer, & Haidt, 2011). Limitations, conflicting findings and methodological issues within the literature are still apparent, however, and further research is necessary to

understand this effect better. Unlike the comprehensive research into the domain specificity of the three-factor model in personality and anxiety symptoms, research into the differential effects of specific types of disgust on political ideology is far less (Olatunji, et al., 2007). Tybur, Lieberman, Kurzban and DeScioli (2013) suggest however, the different forms of disgust are experienced independently from one another and as such, will affect responses to stimuli in different ways. We could therefore expect that such differentiation between experience might influence the way we make decisions about a range of political issues (Brenner & Inbar, 2015).

**Conservative attitudes.** Building the foundation for disgust and political ideology research, Inbar, Pizarro and Bloom (2008) associated higher DS with self-reported political conservatism and in particular, purity-based issues such as abortion and homosexuality (Inbar, Pizarro, & Bloom, 2008). High DS has also been associated with more conservative voting behaviours in American samples (Inbar, Pizarro, Iyer & Haidt, 2011). Terrizzi, Shook and Ventis (2010) found that higher levels of DS, as measured by the original Disgust Scale (Haidt, McCauley, & Rozin, 1994), were associated with right wing authoritarianism ( $r = .49$ ), religious fundamentalism ( $r = 0.33$ ), and prejudicial attitudes towards gay men and lesbians ( $r = 0.37$ ). In all the aforementioned studies, however, disgust has been examined through a general perspective. In other words, the evaluation of overall DS provides evidence for an overall disgust effect, but cannot tell us whether a specific domain of disgust is causing this effect. In contrast, Brenner and Inbar's (2015) Dutch study investigated the domain specific effect of contamination disgust on a range of political items and voting patterns. Most notably, their research found that contamination disgust predicted conservative ideologies better than the DS-R as a whole and predicted voting only for a traditionally conservative Dutch political

party. The results from this study also indicate that the effect of disgust may not be simply due to differing political environments but may well be a culturally unbounded effect. This study, although correlational, made important contributions to a research field based almost solely on North American populations and considered the possibility of differential effects of the separate domains of disgust. Similarly, Chapman and Anderson (2013) explored the differential predictability of the three disgust domains and moral judgments. Disgust sensitivity was assessed using the DS-R and wrongness judgments of moral transgressions were measured through short narratives describing stealing or physical harm and ratings of 1 (*not at all wrong*) to 9 (*extremely wrong*). High core disgust sensitivity was the best predictor of wrongness judgments about moral transgressions, contamination disgust predicted wrongness for social conventions and animal-reminder disgust was unable to predict wrongness judgments for moral or social issues. Moral and social judgments often shape the way we perceive political issues, and so it is reasonable to predict these results would be similar with regard to political issues (Ryan, 2014).

In experimental conditions, disgust continues to have an effect on political issues. For example, in a Canadian study by Faulkner, Schaller, Park and Duncan (2004), positive attitudes toward perceived ingroup persons (Scottish) and negative attitudes toward perceived outgroup persons (Nigerian) were increased by induced disgust (through a core/contamination disgust video), which suggests an association between disgust and conservative views of immigration or foreign intervention issues. Inbar, Pizarro and Bloom (2012) found that when exposed to a disgusting smell, individuals were more likely to make negative evaluations of gay men than those who were not exposed to the smell. Similarly, Horberg, Oveis, Keltner and Cohen (2009) examined the effect of induced disgust on political ideology in the

literature and suggested that the most meaningful effects are increases in conservative attitudes toward purity and sexual-based issues only. Smith, Oxley, Hibbing, Alford and Hibbing (2011) agree, theorising that physiological reactions to disgust predict purity and sexual-based issues but not economic or defense related issues. To reiterate the gap in the literature, however, it is unclear whether this an overarching effect of disgust or if these findings are specific to types of disgust (i.e., contamination, core or animal-reminder disgust).

**Liberal attitudes.** In contrast to the aforementioned literature, Petrescu and Parkinson (2014) suggest that when political issues are concerned with fairness and justice (e.g., equal access to infrastructure or wealth), disgust can in fact increase liberal tendencies. Petrescu and Parkinson (2014) induced disgust using two pictures of toilets and two pictures of vomit. In reference to the three-factor model (Olatunji, et al., 2007), this disgust inducement is representative of core and contamination disgusts, although the authors take a general disgust perspective. Similarly, Moretti and di Pellegrino (2010) investigated the effects of disgust as compared to a sad and neutral mood on the likelihood of participants rejecting unfair offers of the division of money. Disgust was induced using thirteen images ranging from vomit, bodily waste and rotten food and therefore is likely to reflect each domain of disgust. The task was to decide whether to reject or accept a split of money decided by the proposer. Participants in the disgust condition were more likely to reject unfair proposals than the sad or neutral condition. This distinction suggests a clear effect of disgust on moral and social transgressions between individuals (Moretti & di Pellegrino, 2010). This study therefore provides evidence for a strong association between disgust and liberal perceptions of social norms and fairness, particularly in situations of social or economic inequality (e.g., poverty, gender pay gap, the wealth

gap). Although not directly related to politics, rejecting unfair proposals could be associated with deciding some political issues, such as raising the minimum wage or increasing tax.

In summary, there is uncertainty in the literature as to the exact effect of disgust on political ideology. It is the contention of this thesis that the discrepancy between these arguments is caused by a general perspective of disgust, commonly employed by researchers in this field, that has restricted the interpretation of research. Studies that employ a general perspective induce or measure disgust as a singular function, regardless of disgust type. These studies are therefore providing an overall indication of how disgust effects political ideology, but are unable to identify which of these disgust types is causing the most effect, or indeed, if just one type of disgust is attributable. For example, Inbar, Pizarro and Bloom's (2012) study induced disgust using a bad smell. It is argued that this type of disgust inducement is representative of contamination disgust because the source of disgust has not been ingested or is related to sustenance (core) and is not related to death or deformity (animal-reminder) (Rozin, Haidt, & McCauley, 2008). It could therefore be argued that these researchers have induced a specific type of disgust, but have applied a generalist interpretation of its effects.

In contrast, a domain specific perspective of disgust would induce, measure and consequently examine the effect of disgust, based on its differential domains. In doing so, a domain specific perspective allows us to assess whether this effect of disgust on political ideology is caused by all disgust types, and is thus a homogenous effect, or if the effect is caused by only one or two disgust types, and is therefore a heterogeneous effect. Although some studies appear to induce just one kind of



disgust (e.g., Inbar Pizarro & Bloom 2012), the researchers fail to recognise the specificity of their design and have only suggested a general disgust effect.

Of the available literature, contamination disgust has been shown as the strongest predictor of sexual or purity-based political issues such as homosexuality and abortion (Brenner & Inbar, 2015; Crawford, Inbar & Maloney, 2014; Inbar, Pizarro, & Bloom, 2012; Terrizzi, Schook, & Ventis, 2010). A number of studies have also noted a small but significant correlation of contamination disgust and immigration factors (Brenner & Inbar, 2015; Faulkner, Schaller, Park, & Duncan, 2004). Contamination disgust has also been found to predict political ideology to a greater degree than core or animal-reminder disgust (Brenner & Inbar, 2015; Inbar, Pizarro, Iyer & Haidt, 2011). This is likely due to an underlying theme of interpersonal contamination or moral violations, which is arguably more salient to political ideology issues than other elements of core or animal-reminder disgusts (Brenner & Inbar, 2015). Core disgust has predicted higher liberal views of finance and business issues (Petrescu & Parkinson, 2014; Brenner & Inbar, 2015). Finally, and although there is limited evidence, animal-reminder disgust has been shown to be the least predictive of social and moral judgments which suggests there may be a similar effect for political ideology issues (Ryan, 2014).

### **Limitations of the Literature**

The majority of studies have used North American samples. Given that political systems worldwide cannot be generalised to that of the American system, it cannot be assumed that these findings will be replicated in different political environments (Brenner & Inbar, 2015). Brenner and Inbar (2015) were not able to replicate the finding that DS predicts voting patterns in their Dutch sample. They

attribute this to the differing political system in the Netherlands as compared to America. However, cross-cultural confirmatory work on the DS-R (Olatunji, et al., 2009) and the few studies outside of North America (see; Brenner & Inbar, 2015; Inbar, Pizarro, Iyer, & Haidt, 2011) give reason to believe that the influence of disgust on political ideology is not bound by culture. It is therefore a necessary development in this area of research to expand the sample to an Australian population and indeed additional populations in future research.

Secondly, most of this research has been correlational and thus cannot claim causality (Schmidt, 1996). Although a number of experimental studies suggest that this causal relationship is likely, further research is needed to confirm this theory and develop a greater understanding of its mechanisms (Hibbing, Smith & Alford, 2014). Furthermore, it appears that none of these experimental studies have measured pre and post political ideology when comparing the effects of disgust on judgments. Rather, investigations have focused on a between group comparisons of a control group. While a control group comparison can be effective at identifying group differences, acquiring a baseline measurement in a repeated measures design provides greater power and requires smaller samples (Scheiner & Gurevitch, 2001).

A third limitation is a lack of research regarding the effect of disgust on a wide range of specific political issues (Brenner & Inbar, 2015). For example, does disgust predict more conservative views on only sexually based political ideologies or will it predict conservative, or indeed, liberal views on other factors as well?

Finally, the majority of research has investigated the effects of a general perspective of disgust on political ideology, rather than investigating domain specificity. Personality research suggests that disgust is not a completely homogenous response (Olatunji, Haidt, McKay, & David, 2008). For example,

Olatunji, Haidt, McKay and David's (2008) research suggests that the three dimensions of disgust act on different underlying neural substrates and represent different behavioural and personality traits. While most studies have found that disgust leads to, or is associated with, more conservative political views (e.g., Inbar, Pizarro, & Bloom, 2008), others have suggested disgust leads to more liberal political views (Petrescu & Parkinson, 2014) and some have proposed that prior political ideology will effect this relationship (Terrizzi, Shook, & Ventis, 2010). It would therefore be prudent to conduct an in-depth investigation into the specificity of the effect of the domains on political ideology.

### **Aim and Hypotheses**

The aim of this study is to undertake a more nuanced investigation of the relationship between political ideology and disgust. This will be done by exploring shifts in both broad and specific socio-political beliefs that occur as a result of experimental manipulation of the three disgust factors; core, contamination and animal-reminder. Based on the available research, the proposed study puts forward four hypotheses.

Firstly, it is hypothesised that eliciting contamination disgust will result in a significant conservative/right-wing change to political ideology from time one to time two.

Secondly, although there is limited research regarding animal-reminder disgust and political ideology, given Chapman and Anderson's (2013) finding that animal-reminder disgust is not predictive of social or moral judgments, we hypothesise that animal-reminder disgust will result in no effect to political ideology from time one to time two.

Thirdly, it is hypothesised that contamination disgust will result in more conservative/right-wing views regarding immigration and Islam, sex and sexual preference and Indigenous factors.

Finally, it is hypothesised that core disgust will result in increased liberal/left-wing views in regards to the finance and business factor from time one to time two.

## Method

### Participants

This study has been approved by the University of Tasmania Human Research Ethics Committee (see Appendix A). Participants were 136 male ( $n = 26$ ) and female ( $n = 109$ ) University of Tasmania undergraduate students aged between 17 and 61 years ( $M = 23.45$ ,  $SD = 8.37$ ) enrolled in KHA106 Brain, Mind and Emotion in both Hobart and Launceston. Participants completed the tasks as a requirement of their practical work and consent was required for their data to be included in the study (see Appendix C). *a priori* power analysis indicated  $N = 112$  would be required to achieve a small effect, so this sample is adequate.

### Materials

**Demographics.** Age, gender, ethnicity, English as a first language, level of education and religiosity were collected for demographic analysis. Religiosity was based on whether or not the participant identified with any religion and if so, how strongly they associated with that religion from (1) *very little* to (10) *very strongly*.

**Disgust inducement.** The inducement of disgust was based on Moretti and di Pellegrino's (2010) methodology. Three sets of visual images were used to elicit core, contamination and animal-reminder disgust, and a neutral set of images was used for the control group. Each condition contained 10 slides for 10 seconds at a time, with a blank slide presented for 25 seconds between each image. The core disgust condition contained pictures related to human and animal waste (e.g., vomit, faeces – see Appendix D). Contamination disgust (Appendix E) was induced through a slideshow of pictures pertaining to sickness or contagion (e.g., licking a toilet bowl, used tissues). Animal-reminder disgust (Appendix F) was induced in a slideshow containing examples of body deformities or gore (e.g., broken bones, infested wounds). Finally, a neutral condition slideshow (Appendix G) showed pictures of neutral images that did not intend to induce any emotion (e.g., trees, buildings). Images for each condition were collated on a Microsoft Office PowerPoint file in which timing of presentation was automated.

**Manipulation Check.** Participants rated the extent to which they felt emotions after viewing each picture of the manipulation slideshows (see Appendix H). Participants were asked the extent to which they felt happiness, sadness, fear, anger, disgust, surprise and contempt from (1) *'I didn't feel this emotion at all'*, to (10) *'I felt this emotion as strongly as I ever have'*. Participants had 25 seconds to complete this before the next picture was shown. At the end of the slideshow, participants were asked to rate how they felt *overall* in response to the slideshow. These emotions were based on Ekman's (1994) seven basic emotions.

**Australian Political Ideology Scale (APIS).** Brenner and Inbar's (2015)

political item scale was modified for use in an Australian population. The APIS assessed individual political ideologies based on 39 items and 6 factors (see Appendix I). The six factors were: *Immigration and Islam* (e.g., 'Immigrants are a threat to our society'); *Sex and sexual preference*, (e.g., 'Gay marriage should be legalised'); *Indigenous factors*, (e.g., 'Indigenous languages should not be spoken'); *Sexism*, (e.g., 'Men are better in their work than women'); *Finances and business*, (e.g., 'The minimum wage should be raised'); and *Foreign intervention* (e.g., 'Australia should take their troops out of Syria'). Core political issues were adapted from the Australian Broadcasting Corporation's (2016) Vote Compass website which was developed to align user's views with those of current political parties. Participants were asked the extent to which they agreed with each statement using a 5-point Likert scale ranging from (1) *totally disagree* to (5) *totally agree*. Higher scores indicate more conservative views. Homogeneity of reliability analysis revealed a Cronbach's  $\alpha$  of .91 and a Spearman Brown split half unequal length reliability coefficient of .93. These results suggest a high internal reliability of the Australian Political Ideology Scale.

## **Procedure**

This experiment took place on two separate occasions: For time one, participants were required to complete the Australian Political Ideology Scale (APIS) online, as a part of a self-directed practical exercise. Time two was completed face to face practical classes the following week. Each practical class participated in either a disgust inducement task (core, contamination or animal-reminder) or a

neutral/control task. There were two experimental practicals for each disgust condition and one neutral practical.

Participants were first briefed that they would be participating in a study that may involve looking at unpleasant images and that they could leave the room before or during the task, should they feel uncomfortable (see Appendix B for script).

Participants completed the demographic questionnaire and while doing so, were invited to consent to their non-identifiable data being used in the study by indicating 'yes' on the same questionnaire.

After completing the demographic questionnaire, participants were given instructions. In each condition, images were displayed using automatic times presentation, via a classroom overhead projector. Participants viewed each image for 10 seconds, and a blank slide was shown for 25 seconds in between each image, allowing participants time to complete the manipulation check. At the end of the presentation, an overall manipulation check was completed.

On completion of the slides, participants were asked to again complete the APIS. As this study was conducted as a part of the participants' practical content, a debriefing session followed where the study was described. Participants were also asked to refrain from discussing the experiment to other participants until all practical classes had occurred so as to ensure no participants were aware of the study prior to taking part. Participants were able to ask questions related to the study and were thanked for their participation.

## **Design and Analysis**

This study employed a mixed experimental 4 (condition: core, contamination, animal-reminder, neutral) x 2 (time: pre and post manipulation) design. The

dependent variables were the six subscales of the APIS: *immigration and Islam*; *sex and sexual preference*; *Indigenous factors* and *finance and business*; and overall APIS scores at time one and time two. In total, five mixed Analyses of Variance (ANOVAs) were conducted.

Tests of normality revealed several mild outliers in the sample. These outliers did not deviate more than 1 standard deviation from the norm, so no further action was taken to amend their presence (Tabachnick & Fidell, 2013). Tests of normality and Normal Q-Q plots showed normality for all condition groups at time two (post manipulation). At time one, however, the core condition group showed slight deviation from normality as represented by Q-Q plots and Shapiro-Wilk tests indicated a significant deviation  $W(44) = .948, p = .048$ . This test is relatively conservative however, particularly within larger samples (Elliott & Woodward, 2007). Skewness and Kurtosis statistics did not exceed recommended values ( $+ 3.29$ ) for any groups at time one or two and Kolmogorov-Smirnov tests did not indicate significance (Kim, 2013). Therefore, these deviations from normality were not considered harmful to further analysis.

Effect sizes for omnibus mixed ANOVAs were calculated using partial eta square and were interpreted as 0.01 =small, 0.06 =medium, and 0.14 =large (Miles & Shevlin, 2001). Subsequent follow up paired samples t-tests employed Cohen's d effect sizes and were interpreted as 0.2 =small, 0.5 =medium, and 0.8 =large (Cohen, 1988).



## Results

### Data Screening and Demographics

Age means, standard deviations, gender and religious proportions are presented in Table 1.

One-way ANOVAs and Chi squares indicated no significant group differences for gender or participant association with a religion. A significant difference in age between groups,  $F(3,134) = 4.103, p = .008$ , was examined using Games-Howell post hoc as recommended by Field (2013) when the assumption of homogeneity of variance is violated and the sample contains unequal groups. The average age in the core condition group ( $M = 20.3, SD = 4.25$ ) was significantly lower than the animal-reminder group ( $M = 26.37, SD = 10.08$ ),  $p = .002$ , 95% CI [-10.27, -1.884]. It is unlikely, however, that this difference will have any meaningful effect on subsequent analysis, given the small standard deviation of the core condition compared to the animal-reminder group and that all group means are within the small age range of 20 – 26 years.

A significant correlation of age and overall APIS scores at time one ( $r = -.233, p = .007$ ) and time two ( $r = -.187, p = .030$ ) suggest that the younger the participant, the more politically conservative their views. There is some evidence to suggest these effects are usually reversed, where older participants display more conservative views than younger participants, although these differences are often rather small (Adams, Stewart & Blanchard, 2014; Campbell & Strate, 1981). The occurrence of such a correlation in the current study may simply be due to skewed age distribution, as 78% of participants were in their 20s.

Table 1.

*Descriptives for Age, Gender and Religion for Contamination, Core, Animal-Reminder and Neutral condition groups*

		Contamination ( <i>n</i> = 29)	Core ( <i>n</i> =44)	Animal- reminder ( <i>n</i> =48)	Neutral ( <i>n</i> =14)	$F/\chi^2$	<i>p</i>	$\eta^2/V$
Age(yrs.)	Mean	25.31	20.3	26.37	23.21	4.103	.008	.086
	SD	10.86	4.25	10.09	8.9			
Gender								
	Female	22 (76%)	38 (86%)	40 (83%)	9 (64%)	3.98	.263	.172
	Male	7 (24%)	6 (14%)	8 (17%)	5 (36%)			
Religion	Yes	9 (31%)	11 (25%)	19 (40%)	4 (29%)	2.352	.503	.132
	No	20 (69%)	33 (75%)	29 (60%)	10 (71%)			

The level of disgust felt by participants was also negatively correlated with age ( $r = -.232, p = .007$ ) which suggests the younger the participant, the more disgust was felt. This correlation is congruent with current literature which has found modest findings of lower levels of disgust in elderly participants (Gross et al., 1997; Berger & Anaki, 2014; Brenner & Inbar, 2015).

### **Effect of Disgust Condition on Overall APIS Score**

Hypotheses 1 and 2 were investigated using a 4 (condition) x 2 (time) x 1 (APIS score) mixed ANOVA to assess if disgust condition (specifically contamination or animal-reminder) affected participant political ideology from time one to time two. Means and standard errors for contamination and animal-reminder disgust conditions at time one and two are displayed in Figure 1.

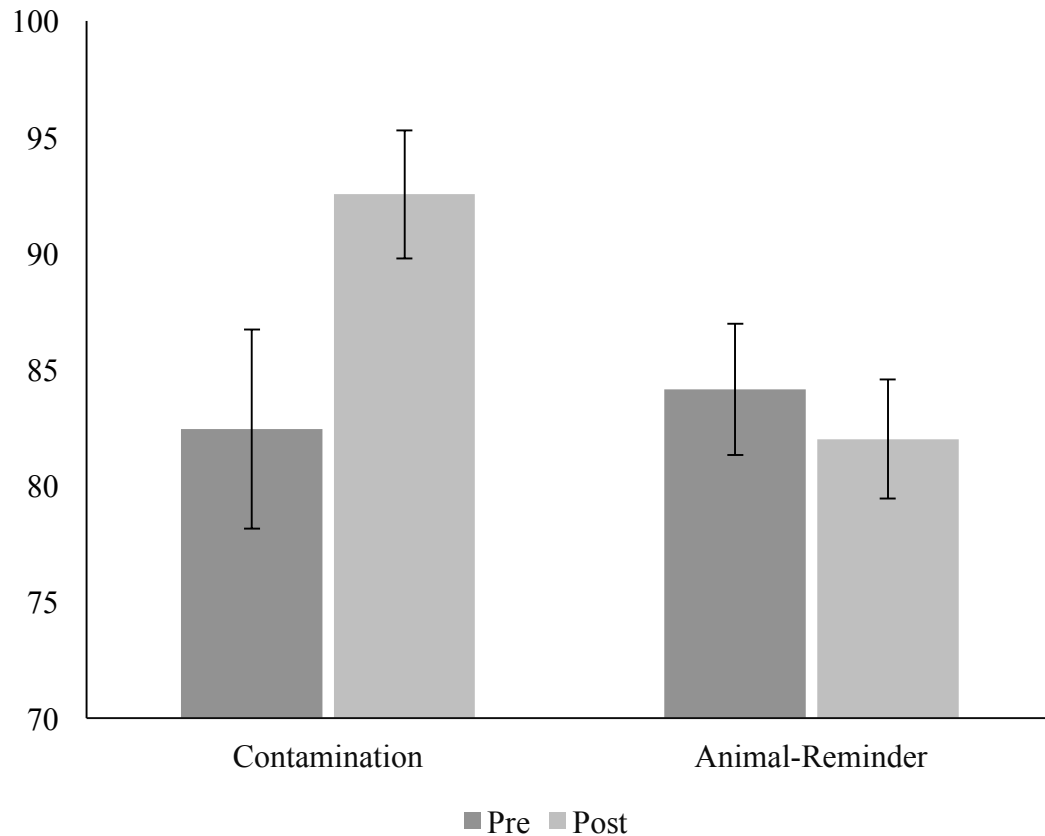


Figure 1. APIS means and standard errors for contamination and animal-reminder disgust conditions at pre and post manipulation times.

Box's Test indicated a significant difference in covariance matrices,  $F(9, 21505.66) = .286, p = .015$ . Box's Tests is often regarded as being sensitive to departures from normality and given we have seen slight deviation in this data, this is likely the cause of the significant statistic (Field, 2013). Moreover, Tebachnick and Fidell (2013) suggest that if the larger samples produce the greater variances then significant results can be considered conservative. In inspection of descriptive statistics for this data, it appears that larger samples do generally produce larger variances.

The results of this analysis did not indicate a significant interaction between disgust condition by time one and time two political ideology score,  $F(3, 132) =$

2.42,  $p = .068$ ,  $\eta^2 = .052$ . Given the moderate partial eta squared effect size however, it was decided to conduct exploratory follow up tests.

To specifically investigate hypothesis 1, that predicted a significant increase in politically conservative views in the contamination group, a paired samples t-test analysed the unique effect of contamination disgust on time one and time two APIS scores. The results of this analysis revealed contamination disgust significantly increased politically conservative views from time one to time two, and this was a moderate effect,  $t(29) = -2.51$ ,  $p = .018$ , 95% CI [-18.33, -1.86],  $d = 0.5$ .

To specifically investigate hypothesis 2, that predicted no meaningful effect on political ideology in the animal-reminder group, a paired samples t-test was conducted. As expected, the results of this analysis did not reveal any meaningful change, although a small effect was reported, in political ideology in the animal-reminder group from time one to time two,  $t(47) = .873$ ,  $p = .387$ , 95% CI [-.28, 7.09],  $d = 0.123$ .

### **Effect of Contamination Disgust on APIS Subscales Immigration and Islam, Sex and Sexual Preference and Indigenous Factors**

Separate mixed ANOVAs were conducted to investigate hypothesis 3, which predicted contamination disgust would cause increase in conservative political views from time one to time two specifically for *immigration and Islam*, *sex and sexual preferences* and *Indigenous factors*. Means and standard deviations for each subscale are presented in Table 2.

Table 2.

*Means and standard deviations at time one and two for contamination disgust condition by immigration and Islam, Indigenous factors and sex and sexual preferences*

		Time one APIS	Time two APIS
Immigration and Islam	Mean (SD)	25.24 (6.80)	27.5 (5.65)
Indigenous Factors	Mean (SD)	11.07 (4.00)	12.24 (3.75)
Sex and Sexual Preferences	Mean (SD)	12.45 (4.80)	14.76 (5.46)

Box's test again indicated a significant difference in observed covariance matrices for the *immigration and Islam* subscale,  $F(9, 21558.273) = 2.708, p = .004$ . With consideration again to slight deviations in normality and larger samples producing larger variances, this violation was not deemed inappropriate for further analysis (Field, 2013; Tabachnick & Fidell, 2013).

No significant effect of contamination disgust was found for *immigration and Islam*,  $F(3, 131) = 1.078, p = .361, \eta^2 = .024$ ., *Indigenous factors*,  $F(3, 131) = 1.457, p = .229, \eta^2 = .032$  or *sex and sexual preferences*,  $F(3, 131) = 2.073, p = .107, \eta^2 = .045$ . However, a moderate partial eta effect size was reported for the *sex and sexual preferences* subscale.

Paired samples t-tests confirmed these non-significant findings, revealing no significant differences between time one and time two for the contamination group regarding political views on either *immigration and Islam*,  $t(28) = -1.72, p = .096$ , 95% CI [-4.90, .426],  $d = 0.36$ , or *Indigenous factors*,  $t(28) = -1.822, p = .079$ , 95% CI [-2.49, .145],  $d = 0.301$ . As suspected given the moderate effect size, political

ideology for *sex and sexual preference* issues significantly increased in conservative or right-winged views in the contamination group from time one to time two, and this was shown to be a moderate effect,  $t(28) = -2.185, p = .037, 95\% \text{ CI} [-4.47, -.144], d = 0.452$ .

### Effect of Core Disgust on APIS Subscale Finance and Business

A mixed ANOVA was conducted to investigate the fourth hypothesis, whether core disgust caused a liberal/left-winged change to political views specifically for the *finance and business* factor from time one to time two. Means and standard deviations for the core disgust group on *finance and business* are displayed in Table 3.

Table 3.

*Means and standard deviations at time one and two for core disgust condition by the finance and business factor*

		Time one APIS	Time two APIS
Finance and Business	Mean (SD)	11.77 (2.90)	11.91 (2.56)

This analysis revealed no significant effect of condition on political views regarding *finance and business*,  $F(3,131) = .572, p = .634, \eta^2 = .013$ . This was confirmed with a paired samples t-test which revealed no significant change in the core disgust condition from time one to time two and displayed a small effect,  $t(43) = -.219, p = .828, 95\% \text{ CI} [-1.39, 1.12], d = 0.051$ .

## Discussion

### Summary of Results

The aim of the present study was to investigate the differential effects of core, contamination and animal-reminder disgusts on individual political ideology. The results of the present study provide partial support for the given hypotheses. The first hypothesis predicted an increase in politically conservative views as a result of contamination disgust. This hypothesis was supported. In line with Brenner and Inbar (2015) and Inbar, Pizarro, Iyer and Haidt's (2011) correlational work, individuals reported significantly more politically conservative views after contamination disgust was elicited. The second hypothesis predicted no change in political ideology in the animal-reminder condition group. This hypothesis was also supported by the results as no significant change occurred in individual political ideology in this condition group. These are similar findings to Chapman and Anderson (2013), who suggested animal-reminder disgust could not predict judgments of social or moral nature. The third hypothesis predicted conservative increases in political ideology in the contamination group in regard to *immigration and Islam, sex and sexual preferences* and *Indigenous factors*. Only one of these predictions was supported; political ideology was significantly more conservative at time two only in regard to *sex and sexual preferences* in the contamination group. This finding is congruent with research that suggests disgust has the most meaningful effect on issues of sex and sexual behaviour (Horberg, Oveis, Keltner, & Cohen, 2009; Smith, Oxley, Hibbing, Alford, & Hibbing, 2011). Contrary to previous research (e.g., Brenner & Inbar, 2015; Faulkner, Schaller, Park, & Duncan, 2004) there were no other significant differences for either *immigration and Islam* or



*Indigenous factors.* The final hypothesis predicted an increase in liberal or left-wing political views (a decrease in actual APIS score) from time one to time two in the core condition group with regard only to the *finance and business* factor. This hypothesis was not supported as the analysis showed no significant change. This finding is also divergent from previous literature that suggested disgust may cause judgments of issues relating to finance and business to be more liberal, or left-winged (e.g., Brenner & Inbar, 2015; Inbar, Pizarro, & Bloom, 2012).

### **Implications of Findings on the Literature**

Within the context of the literature, this thesis comprises some conflicting results, but also contributes several meaningful findings. Perhaps the most important finding is the significant increase in politically conservative views for the contamination disgust group. This provides evidence of a domain specificity of the disgust effect on political ideology. This evidence expands on such findings as Brenner and Inbar's (2015) study which found that while the DS-R as a whole could not predict political ideology, the contamination subscale could. Similarly, Inbar, Pizarro, Iyer and Haidt's (2011) study found that contamination disgust was most predictive of conservatism. This thesis provides meaningful causal evidence to the nature of contamination disgust on political ideology where most research has been correlational. Furthermore, and central to this thesis' aims, this finding provides reason to re-think some suggestions made by previous literature. For example, a number of studies in the literature discuss associations of the three factor model with such constructs as right-wing authoritarianism, conservatism and negative views toward homosexuals (see: Inbar, Pizarro, & Bloom, 2008; Inbar, Pizarro & Bloom, 2012). The findings of the current study provide reason to suggest that these

associations may be reflective of contamination disgust, rather than disgust as a whole. Inbar, Pizarro and Bloom (2012), for example, induced disgust using a bad smell; indicative of contamination disgust. However, these authors extrapolated their results to a general perspective of disgust. Likewise, Faulkner, Schaller, Park and Duncan (2004) induced disgust by presenting a series of pictures representing the ease of which disease spreads through interpersonal behaviours. This could also be described as contamination disgust (Rozin, Haidt, & McCauley, 2008). This thesis provides evidence to re-examine such results as being representative of the domain specificity of disgust – whereby contamination disgust causes a conservative change to political ideology. This is not an untenable suggestion, given the literature on the domain specificity of the three factor model with regard to anxiety disorders, personality traits and physiological responses (Bianchi, 2012; Olatunji, Haidt, McKay, & David, 2008). It is likely that such response differentiation would transfer to the types of judgments this thesis has investigated (Simpson, Carter, Anthony, & Overton, 2006). This finding has meaningful implications on the relationship between disgust and political ideology. What was previously understood as a general effect of disgust, may now be re-established through these results and future research as a domain specific effect.

This thesis also found elicited contamination disgust leads to increased conservative views for *sex and sexual preference* issues. This is congruent with suggestions from a number of researchers that the effect of disgust on political issues is most meaningful on issues of sex and sexual preference (Horberg, Oveis, Keltner, & Cohen, 2009; Smith, Oxley, Hibbing, Alford, & Hibbing, 2011). Moreover, this highlights a feature of disgust consistent with the behavioural immune system theory (Schaller & Park, 2011). That is, individual disgust mechanisms comprise of a

certain ‘social conservatism’ that actively seeks to maintain social order and intergroup attitudes by excluding or avoiding those who might pose a threat (either physical or moral) (Crawford, Inbar, & Maloney, 2014). Indeed, Schaller and Duncan’s (2007) account of disgust sensitivity relates it to political conservatism only for the purpose of intergroup relations and threat of contamination. Crawford, Inbar and Maloney (2014) furthermore found that higher levels of contamination disgust sensitivity not only predicted negative views toward pro-abortion activists but also predicted positive views toward groups who uphold traditional sexual morals (e.g., Evangelical Christians). Combined, these findings provide a compelling account of contamination disgust and its effect on the way some individuals perceive sexually-based issues as threatening to the physical or moral self. This study therefore contributes to a growing amount of literature pertaining to the theory that contamination disgust relates most prominently to issues of being interpersonally harmed or threatened by disease or impurity.

Animal-reminder disgust did not result in any meaningful changes to political ideology in this study. There is almost no evidence of the unique effect of animal-reminder disgust on political ideology, so this finding is particularly complementing (Chapman & Anderson, 2013). We must be cautious in our interpretation of this result, given that this is effectively a null hypothesis and may simply be related to sample issues. However, it may nonetheless provide further indication of the differentiation between the disgust types. Chapman and Anderson (2013) provide evidence to suggest that animal-reminder disgust is not related to judgments of the social or moral nature. Given that the political issues comprising the APIS are of the social and moral nature, it is reasonable to compare these two findings. In comparison to this study’s main finding, that contamination disgust causes a

significant increase in conservative views, we can therefore suggest that animal-reminder disgust *may* not be contributing to the disgust effect on political ideology. Perhaps animal-reminder disgust relates to a different facet of decision making, reflective of an intrapersonal, rather than interpersonal, judgment (Rozin, Haidt, & McCauley, 2008).

While the above findings provide some support for this thesis' main contention, there are also a number of results that are not congruent with predictions. For example, political ideology factors *immigration and Islam* and *Indigenous factors* were not affected by contamination disgust in the way that previous literature would suggest. For example, several studies have found associations of disgust sensitivity and negative or conservative attitudes toward immigration policies, foreigners and nativity (Brenner & Inbar, 2015; Faulkner, Schaller, Park, & Duncan, 2004). Theoretically, contamination disgust relates to interpersonal threats of harm or disease (Olatunji, et al., 2007). Again inline with the behavioural immune system account, Terrizzi, Shook and Ventis (2010) suggest this threat of contamination evokes behaviours of avoidance and exclusion to outgroup members or those who through socially conservative rules, pose a threat to one's health, and so these predictions seem reasonable. One explanation for these discrepancies could be a differing political environment in Australia when compared to the US and the Netherlands, where most of this research has taken place. Brenner and Inbar's (2015) Dutch study produced some dissimilarities between voting patterns but generally, findings from this research were congruent with American samples. Likewise, Inbar, Pizarro, Iyer and Haidt (2011) measured the association of disgust sensitivity and conservatism across 121 countries including Australia and found similar correlations across samples. America and Australia have a number of similarities with regard to

political systems and ideologies. For example, both countries generally align to either a liberal or conservative distinction, but it is the degree to which this alignment is taken which may distinguish the two systems (Lijphart, 1994; Sawyer, 2001).

Perhaps then, the extent to which disgust affects political ideology in America will be stronger due to a more polarized ideological system than in Australia. To confirm these suggestions however, much larger samples should be employed in Australia, as well as in other countries. Considering this study employed undergraduate students, mostly aged in their 20s, the generalisability of this sample is weakened and the effect of political environment variations remains unclear at this point.

Furthermore, core disgust did not cause increased left-wing ideology to the *finance and business* factor, contrary to prediction. One potential explanation for this is that 78% of participants were aged in their 20s. There is evidence to suggest that individuals in this age group can be relatively ignorant when it comes to matters of finance and business (Avard, Manton, English, & Walker, 2005). Perhaps this finding reflects a lack of knowledge of the majority of participants, rather than a true indication of their opinions. Another potential explanation may be that the nature of this prediction is spurious. Inbar, Pizarro and Bloom (2008) were surprised to find higher disgust sensitivity predicted positive views of tax cuts and similarly, Brenner and Inbar (2015) were puzzled as to their positive correlation of DS-R (except contamination disgust) and their finance and business factor. Contrastingly, Terrizzi, Shook and Ventis (2010) found no prediction of finance matters (e.g., tax cuts) from disgust. Brenner and Inbar (2015) suggested that this effect may be a particular feature of US and Dutch political systems. Perhaps then, the results of this study are reflective of another distinction between the Australian political system and that of the Dutch and US.

Another possible explanation for these conflicting findings is that prior political ideology may have played a role in how disgust affected opinions. For example, in Terrizzi, Shook and Ventis' (2010) second study, disgust was induced through an imagery task which asked participants to write an essay about eating lettuce (control) or eating maggots (experimental, core disgust). These results revealed induced disgust caused lowered prejudice toward homosexuals in liberals and increased prejudice in conservatives, suggesting prior political orientation may play a role in the association between disgust and ideology (Terrizzi, Shook, & Ventis, 2010; Faulkner, Schaller, Park, & Duncan, 2004). In line with this theory is Schlenker, Chambers and Le (2012), who suggested that liberals are concerned with equality and conservatives with equity and may thus respond very differently in regard to political and moral transgressions. While this study obtained a baseline measure of political ideology, whether or not prior orientation had an effect on post manipulation political ideology, was not explicitly analysed. For example, prior to disgust elicitation, the core disgust group showed the highest, or most conservative, time one APIS mean score, although this group difference was not significant. Nonetheless, the higher level of conservativeness in the core condition group may have affected the way the *finance and business* factor questions were answered. In other words, perhaps the predicted effect is particular to individuals who already hold a relatively liberal or left-winged ideology. Terrizzi, Shook and Ventis' (2010) research also suggested a distinction in the way that the different forms of disgust enact different responses on a wide range of stimuli. It is plausible then, that prior political ideology could play a role in the response to each domain of disgust, not just core, and the consequent judgments about particular political issues. Future research

should therefore endeavor to include a measurement of prior political ideology as a covariate.

### **Strengths and Limitations**

A strength of this study is the domain specific perspective that was employed. Previous literature commonly employed a general perspective, which only allowed for an overall interpretation of disgust. This study investigated the differential effects of the disgust domains, thereby enabling a suggestion of domain specificity.

Secondly, this thesis employed an Australian sample. Almost all research relating disgust to political ideology has employed North American samples, two exceptions are Brenner and Inbar (2015) who employed a Dutch sample and Inbar, Pizarro, Iyer, and Haidt (2011) who measured DS and conservatism in 121 countries. Given it is the first experimental data in an Australian population, and such research cannot be generalised across political systems, this study greatly complements a growing area of research. Indeed, further accumulation of international samples will provide comparative experimental data to form a framework of this effect across a global perspective.

Thirdly, this thesis developed the Australian Political Ideology Scale (APIS) on the basis of previous literature and the current Australian political climate (Australian Broadcasting Corporation, 2016; Brenner & Inbar, 2015). While more statistical testing is required before this scale can be adequately validated, internal reliability tests are promising. Homogeneity of reliability analysis revealed a Cronbach's  $\alpha$  of .91 and a Spearman Brown split half unequal length reliability coefficient of .93. There are plans for further validation of this scale and the

researchers involved in its development are optimistic for its use in a number of possible disciplines including social psychology, politics and marketing.

A fourth strength of this study is the possible influence of the political climate at the time of testing. The Australian Federal Election was held on the 2<sup>nd</sup> of July, which was roughly a month after this study took place. Such a high intensity of election news in the media is likely to have made participants more aware of their own opinions and values prior to and during testing. Moreover, political ideology is suggested to be a relatively stable trait, especially in regard to core values, so it is unlikely that the political climate would have swayed participant views to such an extent that would explain these results (Sears & Funk, 1999).

There are several important limitations of this study that should be considered. The first refers to attrition rates between session times. Although both components of this study were requirements of the participants' course material, it could not be guaranteed that each participant would complete both sessions, or that consent would be given in both instances. As a result, two condition groups were affected by attrition rates, where more participants completed the second manipulation session than did the online session. For example, the contamination group contained 45 participants in the second session but only 30 in the first session, thus only 30 data points could be used. Similarly, the neutral group contained 19 in the second session but only 14 in the first. As we know, attrition rates can bias the results if the reason for missing data is correlated with the outcome (Dumville, Torgerson, & Hewitt, 2006). In this instance, we believe attrition was simply a matter of chance. However, the loss of sample size, especially between groups, has lowered the power of this study and may have undermined its ability to detect a



reliable effect (Button, et al., 2013). Future research, with appropriate sample size, could consider conducting a multi-level linear model analysis. This is a flexible option for ANOVA and takes into consideration missing data which can provide increased power (Tabachnick & Fidell, 2013).

Secondly, the neutral group actually had an increase in politically conservative views after the second session. While this was not a significant change and sample size was small, it may have nonetheless affected the data such that other significant changes may not have been identified (Button, et al., 2013). For example, this may be the reason why the ANOVA for overall political ideology did not show any effect for disgust type but follow-up tests did show an effect of contamination disgust.

The method of disgust elicitation used in this study was a selection of 10 pictures, shown for 10 seconds each for each separate condition. This method may have limited the ability to effectively elicit disgust, which is crucial to the success of this study. In particular, the differentiation between each disgust type elicitation is essential to the interpretation of results. Manipulation checks for each condition, which asked participants to rate how much they felt each of the seven basic emotions (Ekman, 1994) from 1 - 10, revealed that all disgust conditions produced adequate levels of disgust ( $>5$ ), and the control condition produced almost none (1). However, it is likely that a more effective method of mood induction could produce more reliable results (Rottenberg, Ray, & Gross, 2007). Pictures for the core and contamination groups could be perceived as relatively similar, given that both share a common disease avoidance mechanism (Olatunji, Haidt, McKay, & David, 2008). For example, both slideshows contained pictures of bodily fluids. Furthermore, Kory and D'Mello (2014) argue that static images induced weaker emotional states than

film or physical elicitation (e.g., acting or experiencing). Rottenberg, Ray, Gross (2007), suggest films are among the most ecologically valid emotion inducing techniques due to their ability to depict relatable topics, in emotionally-charged ways. Future research should therefore aim to 1) use a more valid method of mood induction, such as film (for disgust example, see: Gross & Levenson, 1995), and 2) apply a measurement of manipulation accuracy. For example, Olatunji, Haidt, McKay and David, (2008) suggest certain differences in physiological responses (e.g., heart rate, activation of levator labii) for the three disgust types. A measure of these responses would likely determine if distinct disgust inductions have been successfully induced.

Finally, although the three factor model is supported by the literature and is used in a great number of studies in this area, it is possible that there is another type of disgust that may explain this effect more thoroughly – socio-moral disgust (van Overveld, de Jong, Peters, & Schouten, 2011). While it has been argued that only physical forms of disgust elicitors (e.g., eating off food, blood and gore, unusual sexual acts) will evoke disgust, there is also evidence to suggest that more abstract notions, like racism, sanctity and injustice can evoke the same emotion (Royzman & Sabini, 2001; Oaten, Stevenson, & Case, 2009; Horberg, Oveis, Keltner, & Cohen, 2009). For example, a number of studies have elicited disgust using socio-moral transgressions rather than physical disgust stimuli and have found the level of disgust is no different (Wheatley & Haidt, 2005; Jones & Fitness, 2008). Likewise, associations between socio-moral emotion and socio-moral judgments have been demonstrated comprehensively in the literature (Wheatley & Haidt, 2005; Greene, Sommerville, Nystrom, Darley, & Cohen, 2001). The emotional response however, does differ. Simpson, Carter, Anthony and Overton (2006) compared the emotional

response of core disgust and socio-moral disgust, which focuses on violation of humans and the dignity of others. Their findings suggested the emotional response of these two types of disgust was overtly different and that socio-moral disgust was related to sadness and anger while core disgust was related to fear (Simpson, Carter, Anthony, & Overton, 2006). Perhaps then, an in-depth investigation into the effect of disgust types on political ideology should incorporate a socio-moral disgust element. Moreover, the inclusion of this domain of disgust may help to fill the gaps in this study's results and explain conflicting findings.

### **Summary, Recommendations and Conclusion**

The present study contributes an in-depth investigation of the domain specificity of disgust on political ideology. Specifically, these results suggest that contamination disgust causes a significant increase in politically conservative views to overall political ideology and in particular, sex and sexual preferences. The nature of disgust is therefore suggested to be multi-faceted. Future research is justified in order to establish a clear framework of the disgust types, including socio-moral disgust, and their effects on political ideology. A comprehensive understanding of this effect will require further international samples and valid mood induction methods. This research, and research to follow will provide meaningful information to a number of disciplines. Being cognisant of these biases and effects can help to understand how individuals make decisions and form judgments about their social environment. These findings could be particularly salient in political messaging, for example. Understanding the effects some political material may have on a certain cohort of individuals could influence the way political messages are presented, particularly if these messages are extreme or controversial.

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## **Appendices**

### **Appendix A – Ethics Approval**

## Appendix A – Ethics Approval

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HUMAN RESEARCH ETHICS  
COMMITTEE (TASMANIA)  
NETWORK

28 April 2016

Ms Christine Padgett Division of Psychology University  
of Tasmania

Student researcher: Anna-Kate Fitzgerald

*Sent via email*

Dear Ms Padgett Re: MINIMAL RISK ETHICS APPLICATION  
APPROVAL

Ethics Ref: **H0015690 - The influence of emotion on intentions for  
voting behavior**

We are pleased to advise that acting on a mandate from the Tasmania  
Social Sciences HREC, the Chair of the committee considered and  
approved the above project on 27 April 2016.

This approval constitutes ethical clearance by the Tasmania Social  
Sciences Human Research Ethics Committee. The decision and  
authority to commence the associated research may be dependent on  
factors beyond the remit of the ethics review process. For example,  
your research may need ethics clearance from other organisations or  
review by your research governance coordinator or Head of  
Department. It is your responsibility to find out if the approval of other  
bodies or authorities is required. It is recommended that the proposed  
research should not commence until you have satisfied these  
requirements.

Please note that this approval is for four years and is conditional upon  
receipt of an annual Progress Report. Ethics approval for this project  
will lapse if a Progress Report is not submitted.

The following conditions apply to this approval. Failure to abide by  
these conditions may result in suspension or discontinuation of  
approval.

1. It is the responsibility of the Chief Investigator to ensure that all  
investigators are aware of the terms of approval, to ensure the project  
is conducted as approved by the Ethics Committee, and to notify the

Committee if any investigators are added to, or cease involvement with, the project.

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A PARTNERSHIP PROGRAM IN CONJUNCTION WITH THE DEPARTMENT OF HEALTH AND HUMAN SERVICES

Social Science Ethics Officer Private Bag 01 Hobart Tasmania 7001  
Australia Tel: (03) 6226 2763 Fax: (03) 6226 7148  
Katherine.Shaw@utas.edu.au

- 2.Complaints: If any complaints are received or ethical issues arise during the course of the project, investigators should advise the Executive Officer of the Ethics Committee on 03 6226 7479 or [human.ethics@utas.edu.au](mailto:human.ethics@utas.edu.au).
- 3.Incidents or adverse effects: Investigators should notify the Ethics Committee immediately of any serious or unexpected adverse effects on participants or unforeseen events affecting the ethical acceptability of the project.
- 4.Amendments to Project: Modifications to the project must not proceed until approval is obtained from the Ethics Committee. Please submit an Amendment Form (available on our website) to notify the Ethics Committee of the proposed modifications.
- 5.Annual Report: Continued approval for this project is dependent on the submission of a Progress Report by the anniversary date of your approval. You will be sent a courtesy reminder closer to this date. **Failure to submit a Progress Report will mean that ethics approval for this project will lapse.**
- 6.Final Report: A Final Report and a copy of any published material arising from the project, either in full or abstract, must be provided at the end of the project.

Yours sincerely

Katherine Shaw Executive Officer Tasmania Social Sciences HREC

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2.

A PARTNERSHIP PROGRAM IN CONJUNCTION WITH THE  
DEPARTMENT OF HEALTH AND HUMAN SERVICES



## **Appendices**

### **Appendix B – Information Script**

## Appendix B – Information Script

### Script for practical classes

Tutors will introduce the option to contribute class data to the research project by reading one of the two following scripts.

*For the practical classes who will view the neutral slides:*

“For the next part of the practical, we would like you to complete some questions regarding your age, gender, and religious and political beliefs. After that, we will be showing a powerpoint presentation of 10 images. After each slide you will be asked to rate them in regards to their emotional content and how interesting they were. At the end of the slideshow you will be asked to complete a questionnaire. None of the information that you provide in this activity will require you to provide any identifying information. As such, your data will be completely anonymous.

We would also like to invite you to contribute your data from this activity to a research project which is being carried out by staff and an honours student in the School of Psychology. Contributing your data is by no means compulsory...whether or not you choose to contribute your data is entirely up to you. There is no penalty in any form if you choose not to contribute your data, and you will still be able to complete the activity. If you would like to contribute your data for research purposes, please indicate this on the questionnaires that will be handed out. Does anyone have any questions or concerns before we proceed?”

*For the practical classes who will view the disgust slides:*

“For the next part of the practical, we would like you to complete some questions regarding your age, gender, and religious and political beliefs. After that, we will be showing a powerpoint presentation of 10 graphic images, which could include images of surgical procedures, bodily fluids, or other unpleasant imagery. If you feel uncomfortable about viewing these sorts of images, you are welcome to leave the practical for this time, and I will ask you back into the class once the slides have been shown. You also can leave the room during the slideshow should you wish to, or not look at the slides. After each slide you will be asked to rate them in regards to their emotional content and how interesting they were. At the end of the slideshow you will be asked to complete a questionnaire. None of the information that you provide in this activity will require you to provide any identifying information. As such, your data will be completely anonymous.

We would also like to invite you to contribute your data from this activity to a research project which is being carried out by staff and an honours student in the School of Psychology. Contributing your data is by no means compulsory...whether or not you choose to contribute your data is entirely up to you. There is no penalty in any form if you choose not to contribute your data. If you would like to contribute your data for research purposes, please indicate this on the questionnaires that will be handed out. Does anyone have any questions or concerns before we proceed?”

## **Appendices**

### **Appendix C – Consent Form and Demographic Questionnaire**

## Appendix C – Consent Form and Demographic Questionnaire

### Demographic Questionnaire

**What is your gender?**

- ☐ Female  
☐ Male  
☐ Would rather not say

**How strongly do you associate with this religion? (please circle)**

1= very little, 10= very strongly

1 2 3 4 5 6 7 8 9 10

**How old are you? \_\_\_\_\_**

**Is English your first language?**

- ☐ Yes  
☐ No

**Do you consent to your data being used for research purposes?**

- ☐ Yes  
☐ No

**What is your ethnicity?**

- ☐ Aboriginal  
☐ White/Caucasian  
☐ Black/African decent  
☐ Asian  
☐ Pacific Islander  
☐ Hispanic

**What is the highest level of education you have completed?**

- ☐ High school/college  
☐ Bachelor's degree  
☐ Master's degree  
☐ Doctorate degree

Please record the last three digits of your mobile phone number followed by the first three letters of your mother's maiden name

\_\_\_\_\_

**Are you religious? If so, what religion do you associate yourself with?**

\_\_\_\_\_

Tutor use only

D-AR / D-C / D-Cont / D-N

## **Appendices**

### **Appendix D – Core Disgust Manipulation**

## Appendix D – Core Disgust Manipulation













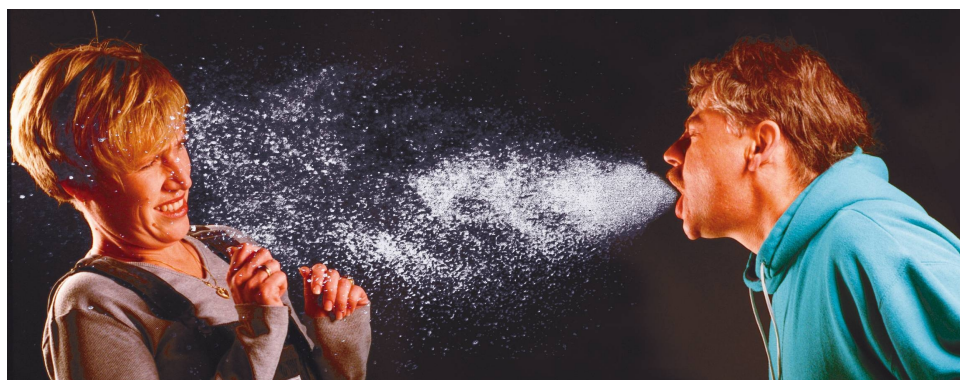
## **Appendices**

### **Appendix E – Contamination Disgust Manipulation**

## Appendix E – Contamination Disgust Manipulation







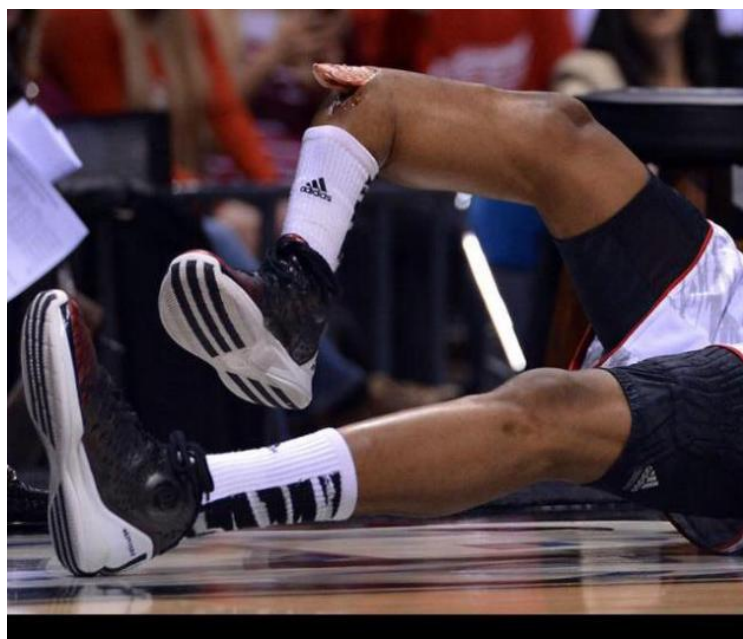




## **Appendices**

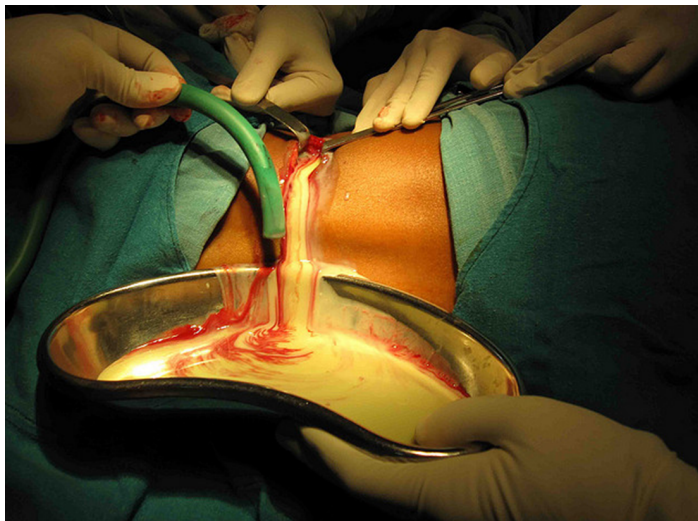
### **Appendix F – Animal-Reminder Disgust Manipulation**

## Appendix F – Animal-Reminder Disgust Manipulation











## **Appendices**

### **Appendix G – Neutral Mood Manipulation**



## Appendix G – Neutral Mood Manipulation













## **Appendices**

### **Appendix H – Manipulation Checks**

## Appendix H - Manipulation Checks

### Single Picture Feedback

#### PICTURE FEEDBACK

Look at each picture for the entire time it is on the screen. When the black screen shows after a picture, circle the number below that best reflects how strongly you felt each of the emotions listed, and circle how interesting you thought the picture was.

#### PICTURE 1

*1= I didn't feel this emotion at all    10 =I felt this emotion as strongly as I ever have*

Happiness	1	2	3	4	5	6	7	8	9	10
Sadness	1	2	3	4	5	6	7	8	9	10
Fear	1	2	3	4	5	6	7	8	9	10
Anger	1	2	3	4	5	6	7	8	9	10
Disgust	1	2	3	4	5	6	7	8	9	10
Surprise	1	2	3	4	5	6	7	8	9	10
Contempt	1	2	3	4	5	6	7	8	9	10

**How interesting did you find the picture? (Please Circle)**

Not very                  Somewhat                  Very

## Overall Slideshow Feedback

Overall, how much did the slides make you feel each of the emotions below

*1= I didn't feel this emotion at all    10 =I felt this emotion as strongly as I ever have*

Happiness	1	2	3	4	5	6	7	8	9	10
Sadness	1	2	3	4	5	6	7	8	9	10
Fear	1	2	3	4	5	6	7	8	9	10
Anger	1	2	3	4	5	6	7	8	9	10
Disgust	1	2	3	4	5	6	7	8	9	10
Surprise	1	2	3	4	5	6	7	8	9	10
Contempt	1	2	3	4	5	6	7	8	9	10

Overall, how interesting did you find the pictures? (Please Circle)

Not very                  Somewhat                  Very

## **Appendices**

### **Appendix I – Australian Political Ideology Scale**

### Appendix I – Australian Political Ideology Scale

*Please circle your answer for each question below:*

	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree
<b>1. Immigrants are a threat to our society</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>2. Australia should be allowing more asylum seekers into the country</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>3. There are too many immigrants in Australia, so sometimes I feel strange in my own country</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>4. Islam is a threat to Australian culture</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>5. Other religions, such as Islam, enrich our country</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>6. Immigrants take the locals' jobs.</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>7. No more mosques should be built in Australia</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>8. Immigrants bring more crime</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>9. Headscarves are oppressive</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>10. It's better for our society if immigrants keep their own traditions and habits</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree
11. If you immigrate to Australia, you should learn the language	1	2	3	4	5
12. It's okay for people to have sex before marriage	1	2	3	4	5
13. Gay couples should be allowed to adopt children	1	2	3	4	5
14. If gay people are allowed to marry in the future, it shouldn't be called a 'marriage'	1	2	3	4	5
15. People who are openly gay shouldn't serve in the military	1	2	3	4	5
16. Gay marriage should be legalized	1	2	3	4	5
17. Abortion should be illegal	1	2	3	4	5
18. The Mardi Gras is a positive aspect of Australian culture	1	2	3	4	5
19. In principle, there is nothing wrong with a one-night stand	1	2	3	4	5
20. Saying sorry to the stolen generation was the right thing to do	1	2	3	4	5
21. Aborigines and Torres strait islanders should	1	2	3	4	5

	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree
not get as many benefits as they do					
22. Acknowledging the traditional custodians of the land is unnecessary and is keeping Australia in the past	1	2	3	4	5
23. Indigenous languages should not be spoken	1	2	3	4	5
24. The date of Australia Day should be changed out of respect for Indigenous peoples	1	2	3	4	5
25. Men are better in their work than women	1	2	3	4	5
26. Women are less capable of working than men	1	2	3	4	5
27. I would prefer to have a man in a leadership position than a woman	1	2	3	4	5
28. When women complain about sexism, they frequently just want to work the situation to their favor	1	2	3	4	5
29. If a couple has children, it's better if the woman stays	1	2	3	4	5

	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree
<b>home to raise them</b>					
<b>30. The minimum wage should be raised</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>31. It should be easier for employers to fire employees</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>32. Unions have too much power in Australian workplaces</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>33. It's fair that people with a higher income pay relatively more taxes than people with a lower income</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>34. It is important for Australian employees to join a Union</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>35. Australia should take their troops out of Syria</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>36. Australia should not provide military assistance to foreign countries in the war against terrorism</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>37. The Australian government isn't doing enough to prevent radicalization and extremism in Australia</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>



	Totally disagree	Disagree	Neither agree nor disagree	Agree	Totally Agree
<b>38. The Australian government is spending too much money on foreign intervention</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>39. The long term gains of Australian troops working in places like Afghanistan and Iraq are worthwhile (i.e. teaching them to defend themselves, providing security)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

***You have now finished. Thank you.***